

THE BULLETIN

APRIL 1917



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NEW YORK

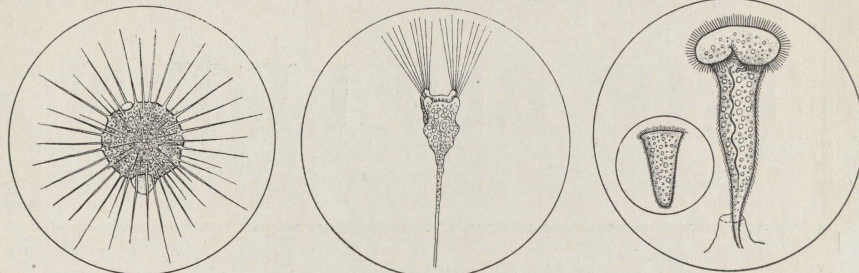


Fig. 2

Fig. 3

Fig. 4

Unseen Inmates of Your Aquarium

By HARVEY A. VAN COTT

Fig. 2. Represents the sun animalcule a minute protozoan found in considerable numbers in our aquariums. Very large specimens may sometimes be detected with the unaided eye, especially under certain lighting conditions, as a whitish spherical particle.

Under slight magnification the form of the animal in general could be likened to that of a chestnut burr. It also reminds one of the old graphic method of illustrating the sun, such as employed in old almanacs from which comparison it no doubt derived the name of sun animalcule.

The central part of the little animal is composed of a homogeneous mass of protoplasm, from which a number of slender pointed spines are seen to radiate. These spines are termed pseudopodia and appear to be fixed in their positions, although they can be observed assisting in the securing of food. Its food consists in part of other smaller organisms and when one of these come in contact with one of the many radiating pseudopodia, this usually retains it by adhesion and may be seen after a little time to glide along the edge of the pseudopodia towards the body. The food particle arriving at the surface of the body, this sends over it an extension of its body substance until it is finally encompassed completely and the process of digestion begins. All indigestible parts are slowly worked out towards the surface of the body and ejected through an opening at almost any part of the body; which orifice seems to be momentarily created for the purpose.

After the undigested particle is ejected the passage opening is immediately closed and becomes unrecognizable.

A contractile vesicle, pulsating at irregular intervals is readily noticeable, more commonly a contractile vacuole is noticed projecting from the edge of the circumference. Movement of the animal is only noted under very close observation and is brought about by the rapid contraction of the vacuole which causes a very slight jerky movement. This little animal always proves interesting when seen through the microscope, due to a great extent to its remarkable and beautiful form, and its great contrast in this respect to the many other animals associated with it. I have failed to note its process of reproduction.

Fig. 3. Represents an infusorian of unusual form and of rare occurrence in my aquariums. The one illustrated is the only specimen I have found to date. I managed to keep this little animal for a few days and in this time studied it closely. It was attached to a thread of algae by the stalk like extension of its body. This position never changed during the number of times I observed it, nor did I note any movement of its body, but movement within the body was noticeable at certain times. Being unable to detect cilia or flagella, I assumed that if this animal, if unattached, is capable of locomotion at all, it must be brought about by some muscular movement of the body.

On one occasion I observed a minute

animalcule caught on an end of one of the delicate tentacles, the free end of which terminates into a knob like dilation, which appears to flatten out and hold the captured animal by some suction power. The little captive was very active and struggled to get free. Finally two more of the tentacles were seen to slowly bend over and fasten on the prey, after which its struggles soon ceased. Several hours later I noticed that two of the tentacles had been removed and assumed their former positions while the prey was again held by only one tentacle. A few moments later this gave a slight jerky movement and freed the remains of its victim.

I examined the lifeless remains under high magnification and it had the appearance of only a shell, with the soft body substance completely sucked out. I regret that I can not tell you more about this rare animal. I lost it due to the evaporation of the water in the little cell in which I managed to keep it for a few days.

Fig. 4. Is a fair likeness of the Stentor, a trumpet shaped ciliated protozoan often found in my aquariums. It is ordinarily attached to some partly decayed plant by its slender extremity.

The Stentor is very active, in fact, I have never noted a live specimen that was perfectly still. When attached and extended it rotates around its base, by the action of its cilia, which not only creates this motion, but the lashing cilia also create currents in the surrounding water which carry food in the form of smaller organisms and other digestible particles to the mouth of the animal.

The only object this animal appears to have in life is to eat. One may watch them for any length of time with the microscope and they will most always be found feeding. The body-wall of the Stentor, although constant in form is elastic, as they can fold in their cilia at the oral aperture and contract their bodies into a much smaller form such as shown in the small circle of Fig. 4. This is the form they assume when free and swimming. The body being covered with vibratile cilia affords means for rapid and graceful swimming, which, combined with the movements exercised in feed-

ing, contracting and extending, makes these little animals extremely interesting to the observer.

When free they will dart ahead very rapidly in a straight line, and instantly reverse the action of the cilia, and with out changing the position of the body, rapidly dart back again. Then they will shoot off at right angles, rapidly spin in a circle, first in one direction, and instantly reverse to the opposite direction, zig-zag back and forth over the field, turn a series of somersaults, in fact, I can not imagine a motion that these little fellows do not practise. They apparently have no sense of sight or direction, but a highly developed sense of touch, as it never runs into anything. The instant the projecting cilia touch an obstacle. They reverse and shoot the animal away in an opposite direction. It is indeed remarkable, considering the speed at which these little animals swim, that the reversing of the cilia can overcome the momentum and start the animal in a new course before the body strikes.

Three of these Stentors, one attached and feeding and two free swimming in a clear drop of water no larger than a small tack-head, under a medium power of magnification, will hold your interest as long as you care to watch.

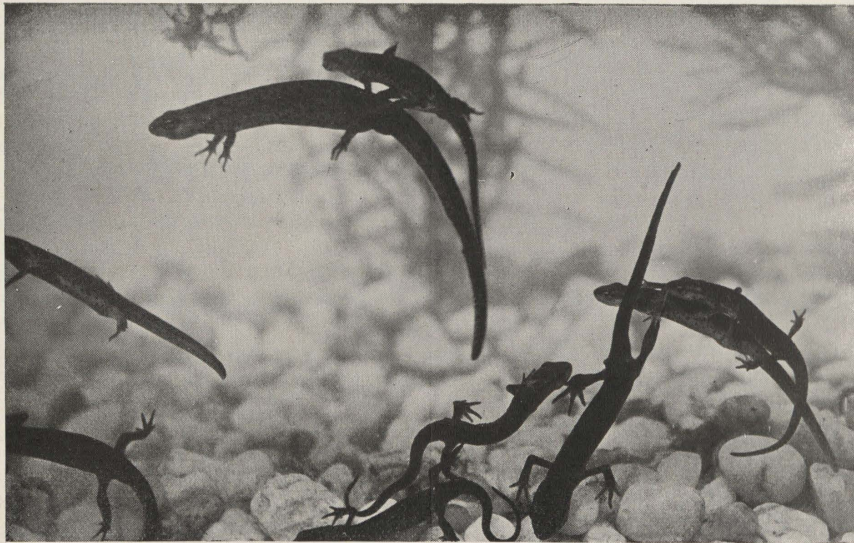
Fish Hawk Invades Aquarists' Field

By JOHN TREADWELL NICHOLS

When the ice has gone from the little inland ponds in April the big goldfish in them have a habit of rising to near the surface where they lie sluggishly basking. At about the same time of year fish hawks are back from their winter grounds in the south, but the fish hawks' ordinary summer food, the menhaden or mossbunker, a species of herring which schools in thousands in salt water, has not yet put in an appearance. The writer was then not justified in being surprised when one spring day he came upon a great fish hawk rising into the air near a little New Jersey ice-pond with a fine goldfish flashing yellow in its talons.

The Terrarium

By RICHARD DECKERT



Common Newt (*Diemyctylas Viridescens*)

Photo by Mr. E. R. Sanborn

Courtesy N. Y. Zoological Society

The large California Newt, *Diemyctylas torosus*, of which a picture was published in the preceding BULLETIN, can often be purchased in New York and Brooklyn Aquarist's stores. It is a handsome species, brown on top and orange yellow underneath. The skin is much wrinkled and covered with small tubercles, each of which bears a tiny spine. This species becomes tame readily, taking food from one's fingers.

It is not quite so alert and quick as its eastern cousin, but equals it in hardiness and longevity. It can be kept in a vivarium, like a terrestrial salamander, but must have plenty of moisture. Like all newts, it is cannibalistic, and small ones should not be kept with large ones.

It attains to a length of six to eight inches. Another species frequently for sale by Aquarists is the Japanese Newt, *Diemyctylas pyrrhogaster*. It is black above, while underneath are many large and small orange or vermillion spots, on a black background. The proportions of the two colors vary, sometimes the red

predominating, and sometimes the black.

The breeding male develops a broad bluish opalescent stripe on each side of the tail. This species has rather small dark eyes, and very prominent parotoid swellings back of the eyes. Along each side of the back a sharp angled ridge can be seen, giving these newts a peculiarly square bodied appearance.

The fire-bellied newt, as it is sometimes called, is very hardy, specimens having been in the writer's possession for more than five years. They feed readily on chopped beef and earth worms, and soon become very fat. When many are kept in one tank, they indulge in great wrestling bouts when food is introduced. It often happens that one or the other loses a leg during the scrimmage, but soon a new one will be seen budding, and in about three months the regenerated limb will have reached its full size.

In the reptile house at the Bronx Zoo, there is a small tank containing eight of these beautiful creatures. Among the lot are several with limbs in different stages of growth. The amputated limb

can be regenerated repeatedly.

Europe has quite a number of species of newts, but owing to the war it will be some time before the many handsome European species will be seen here again.

The mudpuppy or waterdog, *Necturns maculatus*, is often for sale at Aquarists. It is large, reaching a length of 12". The large feathery, pink external gills of this species are especially beautiful and are retained throughout life. The mudpuppy is strictly aquatic, and should be kept in a large tank and in a cool place. It requires a place of concealment which can be easily made with rocks. Two strips of stone, about 1½" thick and 4 to 6 inches long, placed about 8" apart, and a flat stone about 4 to 10

inches laid on top, will make a grotto in which this salamander will feel at home. He will lay in this hiding place, with his head protruding, expanding and contracting his gills. Food should consist of strips of raw beef and earthworms, and can best be offered on the end of a slim stick or a long pair of forceps. If no concealment is provided, the mudpuppy will stubbornly refuse all food.

The color is gray above, with many dark round spots. The tips of the fingers and toes are yellow. The eyes are small and fishy, the limbs rather weak and the tail has a broad fin. Stout examples have a well-defined groove in the middle of the back.

Caring for Baby Goldfish

By Vincent E. Curtis

After the spawn is collected it is desirable to place it in ordinary dish-pans, preferably those of white enamel. The white pans have many points to commend them, among which is the fact that the spawn can be more easily watched, while foreign bodies, particularly the larvae of dragon-fly can be seen. The eggs of this enemy to goldfish are often introduced with the spawning plants and are not observed until they hatch in the pans. It is also easier to watch the baby goldfish develop.

In placing the spawning plants in the pans, it is well to separate the roots and spread them about. In addition to giving the eggs a better chance to hatch, the plants can be removed one at a time and the usual loss of little fry hanging to a bunch of plants on removal can be avoided.

Spawn which is kept warm will hatch sooner than otherwise. In a warm light place the eggs should hatch in from four to six days. In cooler water it sometime takes two weeks.

The little fish are born with a dinner basket—the yolk-sac—attached and this will serve them with sustenance for ten days, after which one must assist them. Their first food may well consist of the yolk of a hard-boiled egg. Placing it in

a very fine mesh piece of muslin it may be gently washed through the water, coming out as a cloudy streak. This however contains the minute particles on which the young may live. The same piece of egg may be used several days if carefully saved.

Rice flower, used sparingly, is also desirable and will help the little ones to grow. Of course daphnia is the real food for the fry as soon as they are large enough to devour it, but should always be screened through at least a sixty mesh wire.

As the little fish grow they should be separated, the larger ones being put in bigger tanks. At this age they are cannibalistic and if left together, there will be no small ones.

A little later they may be fed on finely chopped earth worms, which should now be obtainable, and soon we shall also have mosquito larvae, which they greatly relish.

Some fanciers feed raw scraped beef, but this is not conceded to be especially desirable and often produced tail-rot as an indirect result.

Up to the age of three months they are very delicate and great care should be used in the introduction of fresh

(Continued Page 7, Col. 1.)

Pets of Ours

By HERBERT SMITH

Decorating our dining room is a beautiful aquarium. It occupies a position directly in front of the window where the rays of the sun fall upon it. In comparison with the average home aquarium, this one is rather large.

The aquarium extends from one side of the window to the other. It shuts off part of the outside view, but in the aquarium a better view is given us.

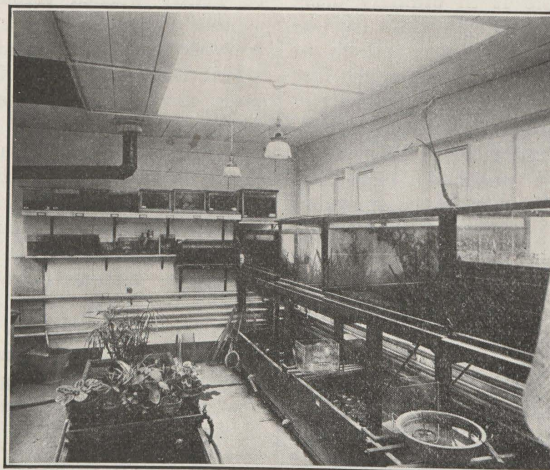
It is strongly built, yet in appearance it is neat. The framework is constructed of brass angle, and the corners are embellished with brass ornaments of which everything is kept highly polished, giving it a gold-like effect.

The frame-work stands upon a handsomely carved and polished oak base. Its front, sides, and back are fitted with crystal glass. Attention was also given in the building, the proportions of which

dignity, and again others with lightning-like speed, our little pets move about, never tiring as it seems, nor we ever tiring looking at them.

You see a little fish whose body is a fiery-red color changing to a pink. It is a scaleless fish, save for a few odd scales scattered about here and there on its body, which when seen in the sun, have the resemblance of tiny spangles. This fish is known as the Japanese Fringe Tail.

Another fish that is scaleless, but whose eyes differ from those of the Japanese Fringe Tail in that her eyes are large and bulging, is known as the Broad-Tailed Telescope Gold Fish. This fish, too, has little spangles, only they are more separated than those of the other, and more sparkling too, while her beautiful tail is penciled in grand colors.



Corner Visel's Conservatory. Note limited overhead light.

having been artistically calculated and observed.

A clean, white and slightly glittering gravel covers the bottom, giving the aquarium a kind of a beach-like appearance; and imbedded in this beach as it were, there is a crowd of plants teeming in life.

And in and out of these plants, sometimes hurriedly, sometimes with great

The Celestial Nymph. This is a most beautiful fish. In color it is very dark, having somewhat of a velvety appearance. The eyes are similar to the eyes of a frog. The tail is long and flowing, being very near as long as its whole body, its color being black and shading off into a dark pink.

Then along comes the Barred Sun-Fish. This is a rare specimen. It has

Hooz Hoo and Y

Mr. Andrew Kroder has devised a gas heating system for his fish house.

Mr. Applegate is designing a new type of hot water heating plant for isolated tanks.

Mr. Wm. Smith's sanitary containers for the healthy fish tank are indeed beautiful. It will pay to observe them.

M. W. Applegate gave up his largest aquarium in order that M. W. A. Jr., might have a daily bath without getting lost in the tub.

Mr. Gnadt is busy building tanks for members.

stripes around its body like a convict's suit; but while the convict goes about his business in a cowed manner, our Barred Sun-Fish goes along with dignity and reserve. This fish as a rule, finds a secluded spot somewhere among the Aquatic plants, where it remains most of the time, often snapping at any other fish that may happen to come near it.

Then we have a school of Stripped Dace and Shiners. These fish are very thin little things. They are very active and graceful, their color being silver; and especially in the sun-light, they look beautiful.

Some of this plant life is lily-like, and blossoms in season. And we have another plant called Ludwiga, which has variegated leaves.

The sun helps in drawing oxygen from the plant life. Little bubbles or globules may be seen rising to the surface of the water when the sun is shining.

This is how our aquarium appeals to me, a beginner.

(Continued from Page 5.)

water. If allowed to drip in large drops, the babies may be injured by the weight of a drop. As a matter of fact but little new water need be added except to replace that which may have evaporated, until they have reached one month of age. After this an occasional slow drip may be used.

Of course it is well to get the baby fish out of doors as soon as the weather permits, usually the latter part of May, where the warm rains, fresh air, insects which fall into the tanks etc., all tend to promote health and growth.

At this point the introduction of plants such as the many beautiful water-lillies, hyacinths, etc., is desirable. First that the little ones may be protected from the sun when they wish and also that the tanks may be made handsome. In this way they serve both for beauty and utility.

Frequent feeding in small quantities, fresh water and—most important—being left alone, should reward the fancier with numerous healthy fish, from two to five inches in length at the close of the season.



An unusually important announcement to children is posted in the Children's Museum. Valuable prizes free.

To the Editor: I like your paper, but would take more interest in it if the advertising were cut out. Can this be done?
M.J.S.

Yes, if you can find someone who will print it gratis. Ed.

A. Obermuller has some fine specimens of goldfish to breed.

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Fourth Tuesday, Exhibitions of Fish,
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THE BULLETIN

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OFFICIAL SOCIETY NOTICE

Meetings of April 10, and April 24th,
1917.

The regular routine order of business
will be conducted first, including reports
of the various Committees.

New application for membership has
been received from Miss Atthea M.
Jaggar, 293 Cumberland Street,
Brooklyn, N. Y.

Members present will be invited to
participate in a discussion as to which
is more interesting to breed and
mountain, Goldfish or Tropical Fish.

On April 24, will be held the first
Tropical Fish Exhibit of the season and
from expressions of various members
this will be one of the largest to be held
at the rooms of the Society.

A competent Judge will decide re-
garding the Certificates to be awarded
for the various Classes shown and you
are urged to add to those Exhibits
already pledged.

A. E. Schierbaum, Cor. Sec.
173 Wiemar St. Elmhurst, N. Y.

Hooz Hoo and Y

F. B. Johonnot has installed in his
new greenhouse a water filtering system.
The reason for this is that the tanks
which are used for show purposes may
be clearer.

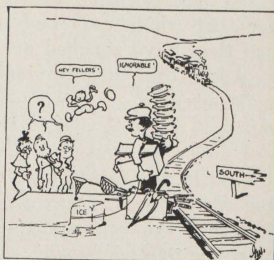
Mr. August Obermuller of Jersey City
has just completed a liberal sized green-
house for the breeding of fish.

F. C. Daniells has spent some little
time training certain of his fish in the
art of hurdling. We are going to expose
his method shortly.

Ever hear of a goldfish boycott. We
are going to let the cat out of the bag
some of these days.

What is a novice or a professional
among aquarists?

Herman Rabenau is making plans to
go to Virginia, Carolina, etc., on another
exploration to collect native and wild fish.
An interesting article on his travels will
appear shortly after his return, in
THE BULLETIN.



Mr. J. J. Halterbeck has removed to
170-172 Twelfth Ave., Astoria, where
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less Aquariums has been built. He is
also building a greenhouse 25x75 feet.

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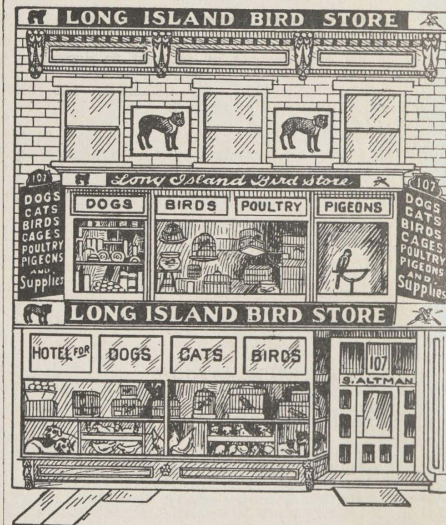
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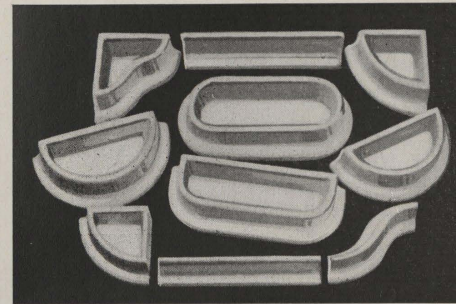
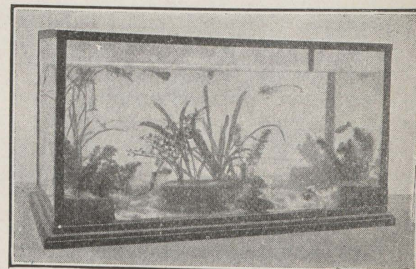
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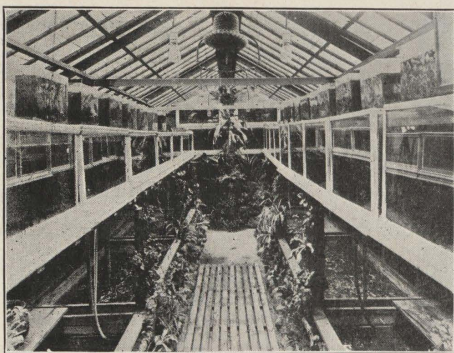
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